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1986

NASA SUMMER FACULTY FELLOWSHIP PROGRAM

Johnson Space Center

University of Houston

**Affirmative Action As Organization Development
At the Johnson Space Center**

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Date: July 25, 1986

Contract #: NGT 44-005-803 (University of
Houston)

AFFIRMATIVE ACTION AS ORGANIZATION DEVELOPMENT

AT THE JOHNSON SPACE CENTER

(ABSTRACT)

This project investigated the role of affirmative actions as an interventionist Organization Development (OD) strategy for insuring equal opportunities at the NASA/Johnson Space Center. In doing so, an eclectic and holistic model is developed for the recruiting and hiring of minorities and females over the next five years. The strategy, approach, and assumptions for the model are quite different than those for JSC's five year plan.

The study concludes that Organization Development utilizing affirmative action is a valid means to bring about organizational change and renewal processes, and that an eclectic model of affirmative action is most suitable and rational in obtaining this end.

AFFIRMING EQUAL OPPORTUNITY:

A Futuristic Plan

Affirming, or reaffirming, equal opportunity among racial, ethnic and minority groups at NASA is obviously a clearcut goal. This has not been simply rhetorical statements used as a means to mollify minorities and females. Or, for that matter, to give the appearance of being in compliance with Federal law. It is clear that the NASA-JSC has made progress (through uneven) in the area of affirmative action and equal opportunity. The policy statement for the last five year plan reads as follows:

The National Aeronautics and Space Administration (NASA) Johnson Space Center (JSC) is dedicated to achieving its technical mission with a fully integrated work force. JSC's policy is to provide equal employment opportunity for all persons regardless of race, color, religion, sex, age, national origin, or handicap...

JSC will provide sufficient resources to administer an effective Affirmative Action Program, including making center facilities accessible to handicapped individuals. All JSC employees, managers and supervisors at all levels are expected to support affirmative actions to insure that the objectives of equal employment become a reality.¹

It is not unreasonable to expect that NASA will have a similar policy statement for the next five years, inclusive of FY87 to FY91. It is important to mention that under the 1964 Civil Rights Act, and as recently as May of 1986, the U.S. Supreme Court indicated that on-the-job racial preferences in hiring and promoting are still constitutional in order to remedy the effects of past discrimination. Hence, the policy statement should note that there will be equal promotional as well as equal employment opportunity.

It should be noted that a broad-based view of affirmative action must examine conceptual, social, economic and organizational components of affirmative action, each of which are worthy of brief discussion here.

Conceptual

Affirmative action is designed to provide minorities, females and the handicapped with the same preferential treatment (ceteris paribus) that white males traditionally and historically have enjoyed. It should not be felt that affirmative action as a legal component can remedy in a short time institutionalized racial discrimination that dates back to, and was part of, the U.S. Constitution that was ratified in 1789.

Social

It is at the societal level where racial discrimination is the most pervasive and deeply rooted. Social values are developed early in life at the familial level and reinforced by peer groups, public schools, co-workers, friends, and, inter alia, institutions of higher education. Social values influence our cultural values, which often results in ethnocentrism and stereotypical attitudes and behavior. It is from attitudinal predispositions that one begins to divide races, sexes and ethnic groups into hierarchical social classes based upon positions and roles of the group in question.

Racial and gender discrimination tend to be individual as well as institutional, and while individuals may assert that they harbor no ill feelings or prejudicial attitudes toward minorities and females, it is the institutions or collective entities noted above that are less innocuous. These institutions educate and train whole generations of people in, subliminally and overtly, in the development of racial attitudes and discriminatory practices.

Economic

Affirmative action assists in closing the economic gap between minorities and non-minorities, on the one hand, and males and females on the other hand. One of the most glaring inequalities in America has been economic in nature, due to past and the on-going effects of present discrimination. Statistics tend to indicate that the income gap between the Black and white family in America is increasing rather than decreasing. In the seventies Black family income had reached 62% of that for its white counterpart. In 1982, Black family income had dropped to 55% of that for white families.²

Affirmative action programs that seek to be effective must be aggressive not only in hiring minorities and females in institutional settings, but in promoting them as well. It is clear that as one goes up the organizational ladder, the pyramidal structure tends to have less and less minorities and females as the apex is approached. Affirmative action has been less successful in this respect, even at NASA-JSC.

Organizational

Effective affirmative action programs result in better racial and human relations between various groups of people as well as understanding of cultural relativism. Such an integrative

approach can result in better informal human relations as well. Affirmative action is, contrary to its critics, a democratic principle designed, in part, to insure more equal representation in the workplace. Ideally, ethnic, racial and gender representation in the workforce and organizational settings should be comparable to the more general representation of these groups as a whole in society. While this cannot always be done, there are alternative ways and means of setting affirmative action hiring goals, which will be addressed later in this study. The use of T-Groups, outside consultants, other Organization Development (OD) strategies, and the role of the Equal Opportunity Programs Office must continue to be catalysts of change in organizational settings.

The JSC Five-Year Plan

Strategy

The Johnson Space Center strategy for the next five years is:

- 1) to continue with proven approaches through a) college recruiting, and b) the co-op program;
- 2) to begin focusing more attention on the Asian /Pacific Islander group by a) determining where they are, and b) conducting targeted recruiting activities;
- and 3) to closely monitor plans and

accomplishments for all groups by a) close coordination between the EO office and Personnel office, and b) regular feedback to management and employees.³

Approach

This strategy will be pursued through the following approach:

- 1) recruitment of the "highest quality" (my quotations) candidates will be number one priority,
- 2) continuing progress in all minority/female areas (groups),
- 3) a special emphasis upon non-minority females and Asian/Pacific Islanders, and
- 4) an annual increase of approximately 20 minority/female positions.⁴

Assumptions

The following assumptions, both implicit and explicit, are built into the JSC five year plan:

- 1) minority scientists and engineers will be hired in their field if NASA does not hire them,
- 2) census and other data are correct and accurate in reporting data regarding the status of minorities,
- 3) minority scientists and engineers are not underemployed even when hired in their respective fields,
- 4) racial discrimination is not a factor in minorities and women finding

- jobs in their fields,
- 5) a constant workforce strength, and
 - 6) a 5.5% turnover for non-minority males and a 4.5% turnover for minorities and females.

The strategy, approach, and assumptions discussed here relate primarily to the recruitment of minorities and females in the areas of science and engineering. Science and engineering are easily the largest occupational categories at NASA Johnson Space Center. Table I reflects the breakdown of various scientific and engineering representation models based upon the work force in the population at-large, compared with data developed by the Assistant Administrator for the Office of Equal Opportunity Programs at NASA headquarters in Washington, D.C. These data reveal statistics broken down by race, ethnicity, and gender.

As of January 1986, minorities and females made up 18.5% of the scientists and engineers at JSC. Non-minority females make up the largest category with 148 (7.5%) employees. Black males, along with Hispanic males, constitute the second largest numbers with 76 and 75 workers respectively (3.8% each). Other than non-minority females, Black female scientists and engineers make up 21 (1.1%), Hispanic females

TABLE I

JSC SCIENTIFIC & ENGINEERING WORK FORCE
A COMPARISON OF VARIOUS REPRESENTATION MODELS

MODEL	NM		BLACK		HISPANIC		A/PI.		AM. IND.	
	M	F	M	F	M	F	M	F	M	F
ON-BOARD STRENGTH AS OF 1-28-86	81.5%	7.5%	3.8%	1.1%	3.8%	.5%	.9%	.4%	.5%	.1%
	1611	148	76	21	75	10	18	8	9	1
CENSUS	82.4%	7.6%	2.4%	.6%	2.0%	.3%	4.0%	.4%	.2%	.0%
	1629	149	47	12	40	5	79	9	4	0
ΔON-BOARD	+18	+1	-29	-9	-35	-5	+61	+1	-5	-1
COLLEGE GRADS. (80-81 YEAR)	73.5%	15.9%	2.6%	1.0%	1.6%	.3%	3.8%	.9%	.2%	.05%
	1493	314	51	20	32	6	75	18	4	1
ΔON-BOARD	-118	+166	-25	-1	-43	-4	+57	+10	-5	0
60 COLLEGE/40 CEN.	77.1%	12.6%	2.5%	.8%	1.8%	.3%	3.9%	.7%	.2%	.03%
	1524	249	51	16	36	6	77	14	4	1
ΔON-BOARD	-87	+101	-25	-5	-39	-4	+59	+6	-5	0
HARRIETT JENKINS	70%	14%	4%	1.5%	4%	1.1%	4%	.8%	.5%	.1%
	1384	277	79	30	79	22	79	16	10	2
ΔON-BOARD	-227	+129	+3	+9	+4	+11	+61	+8	+1	+1

SOURCE: JOHNSON SPACE CENTER 1986

10 (.5%), Asian/Pacific Islanders 8 (.4%), and American Indian females 1 (.1%). Proportionately speaking to the S&E total workforce at JSC, minority women tend to be the most underrepresented. In fact, based upon JSC's data, minority women constitute a total of only 2.1% of the workforce compared to 7.5% non-minority females. As a whole, women in the aggregate make-up 9.6% of the scientists and engineers.

The JSC fares better in some of the minority and female categories than the other representative models and worse in other categories vis a' vis these models. However, the workforce groups at JSC appears to be comparable or at a higher percent for most of the models. The exception tends to be with non-minority females and Asian/Pacific Islanders. It is these two groups, of course, that have been targeted for the next five year plan.

The initial proposal put forth by Harriet G. Jenkins (Assistant Administrator) seems to allow for the fact that minority females are grossly underrepresented at the JSC vis a' vis other groups. This model allows for anywhere from one to 11 new hires over the next five years for the various categories of minority females and 129 new hires for non-minority females.

Table II reflects JSC's counter-proposal to Jenkins' initial plan. One thing that is immediately clear is that JSC's

TABLE II
COUNTER JSC MINORITY AND
FEMALE RECRUITMENT PLAN

<u>Group</u>	<u>Current-1986</u>	<u>Five</u>	<u>Year</u>	<u>Projection</u>
<u>Number</u>				
NMM	81.5%	76.4%	-	100
NMF	7.5%	10.7%	+	64
BM	3.8%	3.9%	+	1
EF	1.1%	1.2%	+	3
HM	3.8%	3.9%	+	2
HF	.5%	.6%	+	4
A/PI M	.9%	2.0%	+	22
A/PI F	.4%	.6%	+	4
NAM	.5%	.5%	+	1
NAF	.1%	.1%	+	1

Source: Personnel Department, Johnson Space Center, 1985

counter-proposal would reduce the non-minority male workforce by only 5.1% whereas Jenkins' plan would reduce this group of workers by more than twice this percent (11.5%). All

minority groups and specifically minority females would not fare as well under JSC's counter-proposal. Obviously, non-minority males and females would make the biggest gains under this proposal. Ironically, Asian/Pacific Islander males would have been hurt the most under the initial JSC counter-proposal.

Table III reveals data from Tables I and II above as well as Jenkins' second proposal, followed by JSC's recommended proposal. Jenkins' second proposal reduces her original number of non-minority females from an increase of 124 (14% of the workforce) to 68 (11% of the workforce) with almost all other categories maintaining roughly the same percents, except for non-minority males which would experience a 4.5% increase. The final recommended proposal that NASA-JSC has settled on is a partial compromise between Jenkins' second proposal and the JSC's counter-proposal. This is applicable to the non-minorities, Blacks and Hispanic males in particular, and to a lesser extent with American Indians, though this latter category is almost statistically insignificant because of the low number and percent that they constitute of the total workforce.

TABLE III

S&E'S
5 YEAR PLANS

Plan	Nonminority		Black		Hispanic		A/PI		Am. Ind.	
	M	F	M	F	M	F	M	F	M	F
Harriett's First Proposal (would require 62% M/F new hires)	70.0% -227	14.0% +129	4.0% +3	1.5% +9	4.0% +4	1.1% +11	4.0% +61	.8% +8	.5% +1	.1% +1
JSC Counter Proposal (would require 35% M/F new hires)	76.4% -100	10.7% +64	3.9% +1	1.2% +3	3.9% +2	.6% +2	2.0% +22	.6% +4	.5% +1	.1% +1
Harriett's Second Proposal (would require 42% M/F new hires)	74.5% -138	11.0% +68	4.3% +9	1.4% +7	4.0% +4	.8% +6	2.5% +31	.9% +10	.5% +1	.1% +1
JSC Recommended Proposal (would require 36.8% M/F new hires)	75.8% -112	11.0% +68	4.0% +3	1.4% +7	4.0% +4	.6% +2	2.0% +22	.6% +4	.5% +1	.1% +1

SOURCE: JOHNSON SPACE CENTER 1986

Under the JSC recommended proposal, non-minority males and females are the biggest beneficiaries. This proposal increases the percent of non-minority males 5.8% over the Assistant Administrator's first proposal, through the percent of women hired will actually be 3% less. It is interesting to note that, although JSC has emphasized recruiting Asian/Pacific Islander's over the next five years, the JSC recommended proposal will cut the total number hired from 69 in Jenkin's first proposal to 26, a reduction of 43 new recruits. This is a reduction of almost two-thirds (62.5%). At the same time, while the five year plan will double the number of Asian/Pacific Islanders, this is not the case with the other targeted group, non-minority females. Their number will decrease from the 129 proposed in Jenkin's proposal to 68 in the JSC proposal, a reduction of 61 non-minority females since the numbers and percent for the other minority groups will remain generally the same. It appears that the increase in the numbers and percent for non-minority males will be at the expense of non-minority females and Asian/Pacific Islanders--the targeted groups.

Table IV reflects the annual EO hiring goals for scientists and engineers over a 5 year period and over a 10 year period. Depending upon the plan and workforce model

used, this would mean hiring anywhere from 28% to 62% minorities and females over a five year period and from 22% to 38% over a ten year period.

TABLE IV
ANNUAL EO HIRING GOALS FOR
SCIENTISTS AND ENGINEERS

5 Year Approach

Census Plan College Grad Plan 60/40 Plan Harriet Jenkins Plan

28%	60%	47%	62%
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10 Year Approach

22%	38%	31%	31%
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Source: Johnson Space Center 1986

Obviously, the plan that is most favorable toward minorities and females is Jenkins' plan and the college graduation plan. These plans project the most optimistic approach regarding equal opportunity and affirmative action. The least favorable approach regarding minorities and females is the census plan, which has projections that would more than cut in half affirmative action hiring over the next five years

relative to Jenkins' plan, and project less than two-thirds the number hired over a ten year period, compared to Jenkins' plan.

Weaknesses of the Five Year Plan

The five year plan suffers from a number of weaknesses which could be remedied through the development of an alternative plan that would be more eclectic and holistic in nature. Before turning to such a plan, though, it is prudent to examine the weaknesses of the five year plan at the JSC.

Perhaps unwittingly, an unintended consequence of the five year plan recommended by the JSC is that it will create greater disparities in numbers and percents between non-minority males/females and Asian/Pacific Islanders, on the one hand, and Blacks, Hispanics and American Indians, on the other hand. By doing this, "affirmative action" will be bridging the gap between the dominant group (non-minority males) and minority female groups while at the same time developing larger inequities between non-minority females and minority and minority female groups. The primary goal of affirmative action is to allow those groups that historically

have been victims of discrimination to "catch-up" with white males, who traditionally have enjoyed preferential treatment.

The rationale for this pattern of recruitment and hiring, of course, lies in the argument that minority and minority female groups are not producing scientists and engineers in the population at-large. There are, however, several problems associated with this rationale. One, it must be assumed that census figures are correct since they are used to make projections. Two, such a rationale does not take into account the intensity and length of time of discrimination against minorities and minority-female groups. And three, while various representative models are drawn upon in order to make projections for the various minority groups, the recommended plan ultimately involves arbitrary figures.

Each of these points deserve cursory review. Utilization of census figures, or data arrived at using census figures, have come under sharp attack in the past. Critics argue that the methodological approach used to arrive at total minority populations most often undercount the group in question. Cultural as well as social reasons often come into play which census-takers ignore in making estimates. Hence, the use of these data for making projections tend to be unreliable

because of statistical and reporting errors based upon fallacies and inaccurate assumptions.

The second point, regarding intensity and length of time of discrimination, is not addressed in terms of a concrete formula. That is to say, there is no rational compensatory mechanism which addresses or allows for the effects of past discrimination in the plan. This same problem applies to the third point regarding an arbitrary figure. While the use of the various representative model have some value for establishing ballpark figures, there is a need for providing a formula or model using a holistic and more comprehensive approach.

Another weakness of the five year plan is that it attempts to recruit minorities and females based upon statistical data (even assuming the data is correct) which does not account for institutional barriers which may limit the number of minorities and females entering into, and graduating from, schools of science and engineering. Prima facie as well as invidious and more subtle forms of discrimination occur not only in the job sector, but in higher education as well. Colleges and universities with science and engineering programs and majors, like other entities in higher education,

have not been exempt from discriminatory practices. As noted in Chapter II, part of the 1964 Civil Rights Act was designed to specifically address discrimination in institutions of higher learning. Since affirmative action involves, in part, a compensatory component, it would seem that a five year plan would need to address the institutionalization of discrimination and the negative impact thereof.

How will the more pervasive forms of racial and gender discrimination be addressed involving women who are females, on the one hand, and minorities on the other hand in the five year plan? Asian/Pacific Islander women and Hispanic women, for instance, are two categories of people who face dual discrimination as minorities and as women. What recruitment formula would best reflect their social status and representation in the population? Dual discrimination represents a more vexing problem that should be addressed in affirmative action plans in a manner that reflects their "double-negative" status in the profession as well as society as a whole. Black females, historically the most severely discriminated against double minority, will make only a miniscule gain in the five year plan. Their representation in the JSC workforce would rise from a mere 1.1% in 1986 to 1.4% in 1991. This situation is similar for other females at

the JSC.

The approach of the JSC affirmative action plan is one which states that it will seek the "highest quality" candidates as the number one priority over the next five years. However, the phrase "highest quality" is left undefined and subject to interpretation. While it has been stated by JSC that the EO goals are flexible, it is not clear how flexible these goals are. If equal opportunity means, at the JSC, that when there are two equally qualified candidates, one a non-minority male and the other a minority male, the latter will get the job, then such thinking would be in line with the traditional approach and conceptual underpinnings of affirmative action. In juxtaposition to this scenario, if a non-minority female (targeted group) and a minority female (facing dual discrimination) with equal credentials apply for a single slot, which candidate should get the position? Again, it seems that such instances beg for a more definitive formula for recruiting and hiring when a more complex recruiting situation exists.

Affirming Equal Opportunity:
An Eclectic Model

Strategy

The strategy of the five year plan is well designed except for emphasizing Asian/Pacific Islanders. An alternative viable strategy would address concentrating and emphasizing all minority and female groups in recruitment and hiring as opposed to selectively recruiting in sub-areas of these categories.

Approach

The approach for this model would emphasize: 1) quality as determined by candidates graduating at or near the top of their class, 2) targeting those minority and female groups that historically as well as currently are impacted by discrimination, 3) putting forth a special effort to recruit and hire candidates who encounter dual discrimination, and 4) constructing an objective and rational model for determining the number and percent of minorities and females to be hired, involving a compensatory variable that is congruent with the letter and spirit of affirmative action.

Assumptions

The holistic (eclectic) model developed here, in contradistinction to the five year plan, would inculcate the following premises:

- 1) a higher percent of minorities and women should be hired than the actual percent graduating from schools of science and engineering,
- 2) a holistic approach is a more representative and equitable means of addressing the "misrepresentation" of minorities and women,
- 3) a compensatory variable/percent is a valid means of addressing the historical and institutional discrimination against minorities and women,
- 4) a holistic model is more compatible and consistent with OD, and
- 5) developing a statistical mean based upon a diversity of statistics and sources is a more valid means for establishing hiring goals.

Limitations of the Model

- 1) The model is developed for NASA-JSC, though it may be applicable to other centers.
- 2) The data for the variables differ in years, which may affect the mean.
- 3) Sources for the data differ, which could affect the mean.
- 4) The model provides examples for Blacks and women engineers only, but would utilize the same formula for the other

minority and minority female groups.

Rationale for the Model

The formula or equation for the model constitutes the following variables: 1) population at-large, 2) college graduates, 3) NASA employees, 4) compensatory adjustment, and 5) percent of minority-female S&E's employed. These variables combine representative numbers in the population at-large and NASA-JSC with the actual numbers graduating from college and those employed in science and engineering. This approach is more consistent with affirmative action plans, which usually attempt to design programs which reflect the representation in the community--in this case the national population and Federal government. This approach for the model attempts to achieve parity with representative figures in the social structure and professionals in government. Affirmative action is turned on its head when attempts are made to use indigenous institutional data for on-board minority and female projections as the sine qua non for recruiting and hiring.

Variables

Population at-large (PAL). The percent of the minority or female group as represented in the general population (e.g.,

Blacks make-up 12% of the U.S. population).

College graduates (CG). The percent of the minority or female group that graduates from colleges and universities in a given year in science and engineering.

NASA employees (NASA). The percent of minority and female scientists and engineers currently on-board at NASA-JSC.

S&E's in workforce (S&E's). The percent of minorities and females in science and engineering in the active labor force.

Compensatory adjustment (CA). This variable constitutes a combination of historical, social, institutional and workforce-related structural factors. Historical as meaning a way to compensate for past discrimination. Social as used here relating to societal values that contribute to and influence the continuing pervasiveness of discrimination. Institutional relates, in the context used here, to organizational cultures that influence discriminatory attitudes. Structural relates to employment factors in the labor force that discriminate against minorities and females. The compensatory adjustment would weigh one percent for minorities and females and two for minority females.

The proposed model of recruitment and hiring for Blacks, than, would consist of the following data:

FIGURE I
BLACK REPRESENTATION MODEL

<u>Year</u>	<u>Variable</u>	<u>(%)</u>
1980	PAL	11.0%
1981	CG	3.6% = 21.9% - 4 = 5.5% +1 = 16.5%
1982	S&E's	2.4% (Mean) (CA)
1986	NASA	4.9%

The model consists of simply taking the four variable percents of PAL, CG, NASA and S&E's and totaling them (21.9), divided by the total number of variables (4) in order to arrive at the mean (5.5%). The mean is added to the compensatory adjustment (CA) variable of plus 1.0% in order to arrive at the final affirmative action recruitment and hiring goal of 6.5% over the next five years for Blacks.

Similarly, the proposed model for females over five years would use the same formula (model) but with the following numbers.

FIGURE II
FEMALES REPRESENTATION MODEL

<u>Year</u>	<u>Variable</u>	
1980	PAL	51.0%
1981	CG	$27.3\% = 114.3 - 4 = 28.6\% + 1.0\% = 29.6\%$
1982	S/E'S	26.4% (Mean) (CA)
1986	NASA	9.6%

It should be kept in mind here that the figure of 29.6% is inclusive of both non-minority females as well as minority females, and the sum total represents females in all of the representative racial and ethnic groups at NASA. Contrary to the JSC plan, the above model projects a recruitment and hiring rate of more than twice the percent of the former plan--29.6% compared to 13.7%. The particular models computed for the female minorities would, as noted earlier, include a CA of plus 2.0 percent.

SUMMARY AND CONCLUSION

In summary, the purpose of this study has been to lay out the JSC policy of equal opportunity, discuss a broad-based view

of affirmative action which includes the conceptual, social, economic and organizational underpinnings, examine the JSC five year affirmative action plan, inclusive of the strategy, approach, assumptions, goal projections and weaknesses of the five year plan, and to offer an alternative five year plan.

The alternative five year plan can be viewed as both eclectic and holistic. The strategy, approach, and assumptions for this model are quite different. As with any field of research, normative values of the investigator have a bearing on research findings. Hence, as with the JSC five year plan, the strategy, approach and assumptions of the "interventionist" come into play. However, it may be argued that the OD interventionist brings a more neutral and objective approach for investigating structural and functional aspects of an organization. This is one of the main advantages of OD. The proposed model, as with any model or theoretical treatise, has limitations, and these have been delineated as well. Nevertheless, it has been argued that an eclectic model which takes into account the "best of all worlds" is a more fruitful and prudent avenue for setting affirmative action goals. Of utmost significance, the holistic model takes into account social and institutional factors that impact upon the level and degree of

discrimination. Given the long history and rising tide of racial and sexual discrimination in America, the model proposed here is a modest and reasonable alternative to the JSC plan.

The following conclusions can be reached as a result of this study:

- 1) OD is a legitimate means of using affirmative action to bring about organizational change and renewal,
- 2) JSC has come quite a ways in the recruitment and hiring of minorities and women from FY70 to FY85,
- 3) a higher percent of minorities and females can and should be hired at JSC than that percent actually graduating from colleges and universities,
- 4) the political environment has made it harder to sustain effective affirmative action programs and easier to rationalize doing away with such programs,
- 5) affirmative action is still a viable tool for integrating the workforce in the public as well as private sector,
- 6) while there are certain negative perceptions of affirmative action, the positive and advantageous factors outweigh the negative and disadvantageous variables, and
- 7) there are more structured methods of arriving at affirmative action goals which are less capricious and less arbitrary.

NOTES

1. Joseph D. Atkinson, Jr., Multi-Year Affirmative Action Plan FY82 Through 86, Equal Opportunity Programs
Office: NASA-Lyndon B. Johnson Space Center, p. 1.
2. Denys Vaughn-Cooke, "The Economic Status of Black America - Is There A Recovery?," in The State of Black America, 1984, New York: National Urban League, Inc., 1984, p. 6.
3. This is part of the Johnson Space Center's proposed modifications affirmative action goals and timetables as of May, 1986. No pages given.
4. Ibid. No page number given.

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